

CLAIMS

96

1. A solid, granular, free flowing, agrochemical composition containing a salt of phosphorous acid and at least one other NPK nutrient, that is homogeneous in the chemical composition and uniform in particle size, that is water-soluble, and that comprises metal microelements.
2. An agrochemical composition of claim 1, wherein at least one of the nutrient is chosen from the group consisting of monoammonium phosphate, monopotassium phosphate, dipotassium phosphate, potassium chloride, ammonium chloride, potassium sulfate, ammonium sulfate, and urea.
3. An agrochemical composition of any one of claims 1 to 2, wherein the salt of phosphorous acid is chosen from potassium salt, ammonium salt, and sodium salt.
4. An agrochemical composition of any one of claims 1 to 3, wherein at least one of the metal microelements is chosen from the group consisting of zinc, copper, iron, manganese, molybdenum, and boron.
5. An agrochemical composition of any one of claims 1 to 4, wherein the metal microelements are present as any commercially available salt.
6. An agrochemical composition of any one of claims 1 to 4, wherein the metal microelements are present in the form chosen from the group

consisting of chloride, sulfate, molybdate, ethylenediaminetetraacetate, and boric acid.

7. An agrochemical composition of any one of claims 1 to 6, wherein the microelements act synergistically with salts of phosphorous acid.
8. An agrochemical composition of any one of claims 1 to 7, additionally containing one or more additives that further enhance its fertilizing and pesticidal properties.
9. An agrochemical composition of claim 8, wherein the additive is chosen from the group consisting of stimulant, pesticide, and surfactant.
10. An agrochemical composition of claim 8, wherein the additive is humic acid.
11. An agrochemical composition of claim 8, wherein the additive acts synergistically with salts of phosphorous acid.
12. An agrochemical composition of any one of claims 1 to 11, additionally containing one or more additives that modify functional or aesthetic properties of the particles.
13. An agrochemical composition of claim 12, wherein the additive is chosen from the group consisting of surfactant and dye.

14. An agrochemical composition according to any one of claims 1 to 13, wherein the NPK nutrient, other than a salt of phosphorous acid, comprises monoammonium phosphate or monopotassium phosphate.
15. An agrochemical composition of any one of any one of claims 1 to 14, which contains from 10 to 95 wt% salts of phosphorous acid.
16. An agrochemical composition of any one of claims 1 to 15, which contains from 5 to 90 wt% of NPK nutrients, other than salts of phosphorous acid.
17. An agrochemical composition of any one of claims 1 to 16, which is completely dissolved when mixed with water at ambient temperatures, in the ratio of 10 parts of the solid to 90 parts of water.
18. An agrochemical composition of any one of claims 1 to 16, which is completely dissolved when mixed with water at ambient temperature, in the ratio 20 parts of the solid to 80 parts of water.
19. An agrochemical composition of any one of claims 1 to 18, which provides a solution having pH 3.4-7.0, when dissolved 1 part in 100 parts of water.
20. An agrochemical composition of any one of claims 1 to 19, which contains from 0% to 1% water.

Amended

-19-

21. An agrochemical composition of any one of claims 1 to 20, which contains from 0.1 to 0.4 wt% water.
22. An agrochemical composition of any one of claims 1 to 21, which contains from 0.005 wt% to 2 wt% microelements.
23. An agrochemical composition of any one of claims 1 to 22, which contains from 15 to 35 wt% salts of phosphorous acid.
24. An agrochemical composition of any one of claims 1 to 23, which contains from 65 to 85 wt% of NPK nutrients, other than salts of phosphorous acid.
25. An agrochemical composition of any one of claims 1 to 24, which contains from 0.05 wt% to 0.5 wt% microelements.
26. An agrochemical composition of any one of claims 1 to 25, which provides a solution having pH 3.8-5.3, when dissolved 1 part in 100 parts of water.
27. An agrochemical composition of any one of claims 1 to 26, which is a free flowing, solid particles, composition.
28. A process for the manufacture of an agrochemical composition according to any one of claims 1 to 27, comprising i) blending and heating at a temperature from 60°C to 130°C a mixture containing phosphorous acid, at least one other NPK nutrient, metal microelements and other additives; ii) introducing a

BEST AVAILABLE COPY

base into the mixture, thus at least partially neutralizing phosphorous acid, wherein the amount of the base is sufficient to provide that the pH of a 1% water solution of the final composition will be between 3.4 and 7.0; iii) homogenizing the mixture, while optionally lowering the pressure above the mixture; iv) and cooling the mixture, while obtaining a homogeneous, granular, free flowing and not caking material, containing from 0% to 1% water.

29. A process according to claim 28, wherein the molten mixture is neutralized by a base of formula MR, wherein M is selected from potassium and ammonium, and R is selected from carbonate and hydroxide.
30. A process according to claim 28, wherein the molten mixture is neutralized by potassium carbonate or potassium hydroxide.
31. A process according to claim 28, wherein the components may be added to the mixture in any order.
32. A process according to claim 28, wherein the components may be preheated in any order before forming the complete mixture.
33. A process according to claim 28, wherein the complete mixture has a temperature between 60°C and 130°C.
34. A process according to claim 28, comprising a molten mixture.

35. A process according to claim 28, wherein the complete mixture is heated to a temperature between 61°C and 100°C.
36. A process according to claim 28, which provides a granular composition homogeneous in chemical composition and uniform in particle-size.
37. A process according to claim 28, which provides a granular, free flowing composition that contains from 0.1% to 0.4% water.
38. A process according to claim 28, which provides a granular composition having hygroscopicity, as expressed by the critical relative humidity, from 50% to 65%.
39. A process according to claim 28, wherein the pressure is lowered below 70 mm Hg.

BEST AVAILABLE COPY